CALIFORNIA MARINE LIFE PROTECTION ACT INITIATIVE
MASTER PLAN SCIENCE ADVISORY TEAM
JULY 6, 2005 MEETING SUMMARY
Ludwick Community Center
864 Santa Rosa Street
San Luis Obispo, California 93401

SAT members present: Loo Botsford, Mark Carr, Steve Gaines, Doyle Hanan, Rikk Kvitek, Jeff Paduan, Stephen Palumbi, Linwood Pendleton, Kevin Piner, Susan Schlosser, Astrid Scholz, Rick Starr, Dean Wendt, Mary Yoklavich

SAT members not present: Steven Murray, Mark Ohman, Kenneth Schiff, William Sydeman, Richard Young

Others present: Michael DeLapa (MLPA staff), Heather Galindo (note taker; SAT support staff), Carrie Kappel (note taker; SAT support staff), John J. Kirlin (MLPA staff), John Ugoretz (DFG staff) and approximately 15 members of the public

Acronyms used: California Department of Fish and Game (DFG), geographic information system (GIS), Marine Life Protection Act (MLPA), marine protected area (MPA), MLPA Blue Ribbon Task Force (BRTF), MLPA Central Coast Regional Stakeholder Group (CCRSG), MLPA Central Coast Science Sub-Team (CCSST), MLPA Master Plan Framework (MPF), MLPA Master Plan Science Advisory Team (SAT)

Introduction and Agenda Review

SAT member Steve Gaines introduced himself as acting chair for this meeting only and reviewed the agenda for the meeting. Changes from the original agenda included adding a discussion of when the SAT presentations would be made during the next BRTF meeting on July 11-12, 2005 in Santa Barbara and moving the discussion of the draft list of decision framing topics for the BRTF until after the draft presentations.

John Ugoretz announced that the SAT presentations to the BRTF would be on Tuesday, July 12 beginning at 8:30 a.m. The presentations should be about fifteen minutes each plus additional time for discussion.

Revised SAT Guidelines

Steve Gaines explained that the draft SAT guidelines had been revised according to the discussion at the May 11, 2005 SAT meeting. He then opened the discussion by asking for any comments on the latest version to assist in the final round of editing.

Comments from SAT members included:
- In the paragraph at the top of page 2 beginning "In conducting", the second sentence should read "The SAT will apply best professional judgment to identify and bridge uncertainties in the available information."
- The structural relationship between SAT members and CCSST is still a bit unclear.

- A concern was voiced that scientists were the only stakeholder group without a vote in the CCRSG. Ugoretz responded by announcing that Dr. John Pearse has been added to the CCRSG with Dr. Steve Webster as his alternate.
- It should be made clear that the advisory role of the SAT requires responses to science-related questions in the MLPA Initiative process, but does not include responding to requests for additional data collection.

John Ugoretz explained there was now a website at which people could submit questions to the SAT. John Kirlin, executive director of the MLPA Initiative, added that he and Central Coast Project Manager Michael DeLapa would initiate a discussion on setting clear bounds for communications with and expectations of the SAT at the CCRSG meeting on July 7-8, 2005. This discussion would include reading a passage about defining what "best available science" means. Michael DeLapa added that CCSST leaders Mark Carr and Dean Wendt, along with support staff, would be responsible for collecting questions for the SAT at CCRSG meetings and then communicating those questions back to the SAT. He acknowledged that guidelines still need to be developed for questions arising between CCRSG meetings.

John Ugoretz finished the discussion by asking that all text edits be emailed to Steve Gaines who will then send out the final version. Each SAT member must approve or disapprove of this final version via an email response in a timely fashion.

MPA Proposal Evaluations

Astrid Scholz opened a discussion on analytical tools by announcing that she had participated in a conference call on the topic with fellow team members Laura Rogers-Bennett and Rikk Kvitek. The call discussed the status of available tools and how they might be useful for the SAT in the MLPA process. John Ugoretz responded by announcing that Laura Rogers-Bennett was no longer a member of the SAT and her replacement was still being determined. He then explained that the current analytical tool being used by the CCRSG is a GIS-based tool used to visualize data layers. He stressed that it was not an optimization or design tool and compared its abilities to the analytical tool ArcView. He added it is the purview of the SAT to evaluate and recommend analytical tools, but these tools must be ready to use by August or September 2005 including any data needed to use the tools effectively.

SAT members responded with the following comments:
- Loo Botsford suggested an analytical tool that his lab has developed might be useful. The tool evaluates the persistence of populations based on the location of MPA polygons due to levels of connectivity via larval dispersal. The tool is currently being used to investigate an area around Point Reyes, but could be adapted for other locations.
- A suggestion was made to go about looking for and evaluating analytical tools in a systematic way and taking advantage of existing technical reviews.
- Useful tools beyond basic visualization tools have already been used in similar MPA planning processes in places like South Africa, Australia, and Florida.

- It is important to think about the questions that need to be answered and the time frame plus level of detail required to answer them.
- Evaluation tools used by the SAT should use criteria consistent with the MPA design guidelines created by the SAT for use by the CCRSG and BRTF. In addition, these tools should be explained to the BRTF.
- The process of communication between the SAT and CCRSG needs to be formalized to avoid creating a disconnect in the ways the two groups use data relevant to the MLPA Initiative.
- It is important to note that the CCRSG will be working at a coarser scale in developing MPA alternatives than the SAT will be in evaluating those proposals. The differences in scale will likely necessitate the use of different tools by the two groups to keep the process running smoothly.
- It is recommended to create a SAT sub-team to develop guidelines for evaluating MPA alternative proposals, including identifying appropriate tools to be used in this process. John Kirlin strongly agreed with this suggestion and added that the current GIS-based tool being used was already under contract and would be used by the CCRSG. Appendix F of the draft MPF includes templates for creating alternative MPA proposals.

The SAT MPA Proposal Evaluation Planning Working Group was created to meet the following objectives:
- Determine needs for staff support and resources in the evaluation process
- Review template for proposals as outlined in Appendix F of the draft MPF
- Consider approaches to and draft criteria for evaluation of MPA proposals
- Review potential tools that might be useful in the evaluation process
- Present proposed criteria and approaches at the next SAT meeting

The group will be comprised of SAT members Steve Gaines (leader), Loo Botsford, Jeff Paduan, Steve Palumbi, Kevin Piner, Astrid Scholz, and Mary Gleason (MLPA Initiative staff contact). The group will meet over lunch to begin their work.

John Ugoretz and John Kirlin reiterated that funds and support staff are available to facilitate data collection or analysis, the purchase of analysis tools or equipment, writing documents, or other needs identified by the working group. They requested advance notice of support needs when possible.

John Ugoretz and Michael DeLapa emphasized that the CCRSG is being encouraged to create a few fully developed proposals by October or November 2005 so that the SAT will have time to evaluate them before they are due to the BRTF in January 2006. The proposal creation and evaluation processes should be as integrated as possible to adhere to this timeline.

John Kirlin reminded the SAT members that they have a clearly defined statutory role in the MLPA Initiative process and that the MLPA Initiative staff will explain that role when it is called

into question by other parties. He pointed out the difference between the MLPA wording calling for the use of "best readily available science" and how this differs from the wording in the Magnuson-Stevenson Fisheries Act which calls for "best available science". The addition of the term "readily" into this phrase is important and serves to emphasize timeliness over quality. When the science is not available, the bias is to action and not to analysis. The process must continue. A SAT member responded by remarking that while a lack of complete information should not halt the process, it also should not be a barrier to future investigation.

John Kirlin continued by calling for a structure for interaction between the SAT, CCSST, and CCRSG, and added that the SAT should focus on identifying questions it is able to answer. Requests for scientific input should be directed into the formalized process when they come from outside parties. A process of peer review and the involvement of additional scientists would be included where needed. He ended by remarking that the MLPA does not require cost benefit analysis or the precautionary principle so he has avoided using that language. Monitoring plans are being developed and this is something with which the SAT can help.

John Ugoretz added that the director of DFG reviewed the final list of SAT members and that the SAT has his support.

Report from Central Coast Science Sub-Team

CCSST member Mark Carr presented a summary of the first CCRSG meeting held in Monterey on June 8-9, 2005, including the following main points:

- CCRSG members introduced themselves and their areas of expertise.
- CCRSG members broke into subgroups to further identify areas of expertise including how this expertise was laid out geographically.
- The CCSST will be split up by region:
  - North – Mark Carr (lead), Rick Starr (alternate lead), Doyle Hanan, Jeff Paduan, Mary Yoklavich
  - South – Dean Wendt (lead), Linwood Pendleton (alternate lead), Steve Gaines, Doyle Hanan
- The CCSST role is to respond to questions at CCRSG meetings in real time when possible and to effectively communicate all other questions back to the entire SAT. The sub-team will not participate directly in the process of deciding on MPA designs.
- Proposed protocol for communicating science questions is to record them during the CCRSG meetings, finalize the list publicly, then email the questions to the SAT for thought and discussion before the next SAT meeting.
- A question was raised by a SAT member at the first CCRSG meeting concerning the phasing in of MPA networks.
- Concerns raised about potential bias in the SAT at the CCRSG meeting have already been addressed at today's SAT meeting by John Kirlin.

A request by another CCSST member for support to organize sub-team meetings outside the SAT and CCRSG meetings was agreed to by John Ugoretz. A CCSST member also suggested it would be best to have a social scientist on the north sub-team and suggested Richard Young or Michael Dalton as possibilities.

Species Likely to Benefit List

John Ugoretz called attention to Table G-1 (Finfish Species Likely to Benefit from Marine Protected Areas) and Table G-2 (Invertebrate, Alga, and Plant Species Likely to Benefit from Marine Protected Areas). He requested the SAT create a sub-team to assess the current population status for these species along with a characterization of how these species would be affected by the implementation of an MPA (e.g. affected directly vs. indirectly). Paul Reilly of DFG created sublists containing those species relevant to the central coast study region, but the SAT was reminded that all species on the master list would need evaluation at some point in the MLPA Initiative process. John Ugoretz referred the SAT to the draft MPF for a description of how tables G-1 and G-2 were originally constructed.

Major points in the discussion included:
- Concern that prioritizing certain species would involve value judgments. John Ugoretz responded by saying that the MLPA calls for improving the status of individual species and it is important to know which species are likely be helped by the creation of MPAs.
- Protocol for prioritization seems a bit unclear but would likely involve consideration of future fishing behavior, size and shape of MPAs, and species life histories. John Ugoretz agreed and said more species could be added to the list (e.g. birds, mammals, etc.) if strong evidence suggested they would be likely to more or less directly benefit from MPA implementation.
- Suggestion that impact of MPA implementation on species could be looked at in two ways:
    1. How species are currently affected by fisheries or habitat interactions, and
    2. How species might respond to future habitat protection.
- Call for clearer definitions for the terms "benefit" and "likely". John Ugoretz suggested a definition for "benefit" as follows: Species whose population or size structure would likely increase due to the removal of fishing pressure by MPA implementation.
- Michael DeLapa mentioned that Charles Wahle, Director of the National MPA Center Science Institute, would make a presentation titled "How Is Your MPA Doing?" at the July 7-8, 2005 CCRSG meeting. He encouraged the SAT members to think about which species on the master list might serve as good indicator species for MPA monitoring and evaluation.
- Important to consider whether benefits are determined by taking current fisheries management into account. Also raised the point that species most likely to benefit could likely be those not currently monitored.
- If possible, identify species likely to undergo population size or range changes due to climate change, decadal oscillations, etc.

- Revisions to this list do not limit other discussions such as economic benefits of non-consumptive uses.

A SAT Species Likely to Benefit Sub-Team was created with the following members: Doyle Hanan (leader), Loo Botsford, Steve Palumbi, Kevin Piner, Susan Schlosser, William Sydeman, Dean Wendt, Mary Yoklavich, and Mary Gleason (MLPA Initiative staff contact).

The goals of this subteam are:
- Develop clear guidelines for how species should be selected for the list (including definitions of the terms "likely" and "benefit").
- Delineate reasons why and how species might be expected to benefit from MPA implementation.
- Present revised list at next SAT meeting.

Draft Presentations for the BRTF

Drafts of presentations intended for the July 11-12, 2005 BRTF meeting were given. Main points of the presentations and feedback from the SAT and members of the public were as follows:

Ecosystems and Ecosystem Services – Mark Carr (lead)

Main points:
- Defines an ecosystem in terms its components of structure, function, services, and connectivity
- Focus on central coast region, species interactions and ecosystem-based management
- Large-scale marine ecosystems defined by oceanographic circulation
- Smaller-scale marine ecosystems based on geology, water depth, oceanography and biological communities (including species composition and diversity, trophic interactions)
- Used example of California kelp forests to provide details on ecosystem structure, function, services, and connectivity
- Highlighted importance of variation within ecosystem types, again using kelp forests as an example
- Control of sea urchin populations and their effect on kelp beds controlled by different species in different regions of California, although all are the same type of ecosystem
- Ended with description of ecosystem based management

Feedback:
- Would be good to include fly-over pictures of northern California kelp beds, both before and after beginning of sea urchin fishery in that region

- Turnover in kelp beds is on the order of 6-7 years, with physical disturbance playing much larger role in northern California kelp beds
- Could point out that the MLPA ahead of its time in thinking about ecosystem approaches to management
- List which habitats occur in which ecosystems
- Anticipate a question about why southern California fishery does not control urchin populations in that region.
- What aspects of ecosystems should the BRTF focus on when making decisions
- Resolve conflict between ecosystems as a fundamental unit and the idea that they can be considered at several spatial scales

Marine Habitats – Rikk Kvitek (lead) and Jeff Paduan

Main points:
- Marine habitats are as complex and diverse as terrestrial habitats and are important to species of interest.
- Habitat properties are determined by seafloor topography and surface type, oceanographic properties, and biogenic habitats.
- Habitat complexity creates patchiness, which promotes biodiversity.
- The MLPA defines specific habitats and considers depth zones, oceanographic habitats, and biogenic habitats.
- A lot of seafloor mapping has been done along the central coast and features include broad shelves, mudrock outcroppings, deep canyons, and Elkhorn Slough.
- Upwelling centers tend to be associated with headlands along the central coast. Upwelling is strongly linked to biological productivity. In addition, upwelling and relaxation cycles could serve as a mechanism to transport larvae offshore and onshore respectively.
- Computer animation was used to demonstrate variability of kelp beds in both space and time. Central coast kelp beds tend to be more continuous, more affected by winter storms, and less affected by El Nino than those in southern California.
- An example was provided of how habitat mapping was used in the Channel Islands MPA planning process to identify both MPA and control sites for evaluation purposes.
- Recommendations were presented for applying habitat knowledge to MPA network design.

Other potential slides to include could make the following points:
- Types and quality of data are patchy, but good proxies for areas lacking high resolution data
- Further details on kelp patch persistence over time

Feedback:
- The importance of habitats in MPA networks should be carried throughout the presentation or left out entirely. Perhaps this topic would be better suited to a later presentation to the BRTF.
- Presentation should mention differences between unique and representative habitats as listed in the MLPA and mention deep water biogenic habitats.
- Presentation should discuss how humans interact with habitats and how this affects species abundances.
- Explain why replicating habitats is necessary even though much of this will be included in the later talk on MPA design.
- Make the link between habitats and communities of species associated with those habitats.
- Point out variation within habitat types (e.g. more than one type of rock habitat).
- Change boundaries on the slide about the Channel Islands MPAs.

Use of Economic Data for the Design and Evaluation of MPAs – Linwood Pendleton (lead) and Astrid Scholz

Main points:
- Definitions of socio-economics and economic analysis
- Outlined three areas of importance
  1) Baseline economic data for areas that might be affected by MPAs
  2) Economic burdens of implementing MPAs
  3) Economic benefits of implementing MPAs
- Example of comparing the net economic value of an area with and without an MPA
- Total economic value includes direct uses (both consumptive and nonconsumptive), indirect uses (coastal protection, clean air, etc.), and value for non-users or future users
- Important to look at both market and non-market impacts
- Consider trade offs between a localized loss in restricted behaviors and restricted activities outside the MPA or unrestricted activities within the MPA
- Consider impacts inside MPAs on both fishing and nonconsumptive uses and impacts outside MPAs, such as spillover or refuge effects
- Key steps involve identifying what is at stake, what the likely impacts are of MPAs, and how to implement adaptive management

Feedback:
- Make explicit that identifying the stakes and likely impacts are required for adaptive management.
- Is there a way to provide examples of relevant data sets? Perhaps something from the Channel Islands process? More detail will also likely be given a later presentation.

- A suggestion was made to include cultural impacts, although this should be included in a later presentation.
- A summary slide could be included to mention other types of relevant data, such as the value of fishing heritage or infrastructure impacts on harbors.
- A concern was expressed that the presentation creates expectations for many data sets that are not likely to be collected. The MLPA does not require a cost-benefit analysis.
- Is it possible to talk about baseline data being collected on nonconsumptive uses, focus groups, and other datasets from the literature?
- Slides to compare the net economic value of an area with and without an MPA could be formatted differently to make the point clearer.
- Use the term "socioeconomics" instead of "economics".
- Discussion ensued about whether there is sufficient available socioeconomic data to make decisions.
- The presentation should highlight information useful for the BRTF as it evaluates MPA proposals.
- Think about putting the presentation in the context of the six goals of the MLPA. Goals 2 and 4 both mention value (economic and intrinsic). Talk about how economists assess these types of values.
- Consider the economic value of including different habitats in MPA designs.
- It is important to distinguish between net and gross values.
- Think about what data is available now or in the near future and how they might be useful.

A second draft of the presentation titled, *Use of Economic Data for the Design and Evaluation of MPAs* was given with many of the above comments incorporated as changes. The second draft was met with approval.

Presenters were asked to bring at least 20 copies of any documents they would like to provide, (e.g. summaries of key points and copies of presentation slides) at the July 12 BRTF meeting. Kvitek offered to bring large-scale data plots for the coastal region between Pigeon Point and Point Conception as a visual aid. Mary Yoklavich offered to contribute definitions to a glossary for the BRTF to aid in understanding of the presentations.

Draft List of Decision Framing Topics for BRTF

John Ugoretz opened this discussion by explaining that the goal of these presentations is to develop a series that works well conceptually and also fits in with what is going on in the MLPA Initiative process at the time.

Unit titles and SAT member participants are listed below. Also included is commentary by SAT members in brief discussions about units not presented at today's SAT meeting.

- Unit 1: Ecosystems and Ecosystem Services – Mark Carr (lead)
- Unit 2: Use of Economic Data for the Design and Evaluation of MPAs – Linwood Pendleton (lead) and Astrid Scholz
- Unit 3: Marine Habitats – Rikk Kvitek (lead) and Jeff Paduan
- Unit 4: The Importance of Big Old Rockfish (Population Persistence) – Rick Starr (lead), Steve Berkeley, Loo Botsford
    - Idea of individual replacement in a population should be included
    - Important for MPA design because it identifies how spatial regulation differs from traditional fisheries management
    - Should acknowledge previous work in fisheries management about reproduction and larval survival
- Unit 5: Larval Dispersal and Recruitment – Steve Palumbi (lead), Loo Botsford, Steve Gaines, Jeff Paduan
- Unit 6: Adult Movement – Rick Starr (lead), Mark Carr, Doyle Hanan, Steve Palumbi
- Unit 7: Consumptive and Non-Consumptive Uses in the Central Coast – Astrid Scholz (lead), Linwood Pendleton, Carrie Pomeroy
    - Suggestion by SAT member to include data such as fishing license sales and changes in human population growth as it relates to ocean use
    - Might want to include changes in fishing pressure through time
- Unit 8: MPA and Network Design – Steve Gaines (lead), Loo Botsford, Mark Carr, Ray Hilborn, Steve Palumbi, Jim Wilen
- Unit 9: Monitoring and Evaluation – Mark Carr (lead) and Jenn Caselle
- Species of Interest and their Ecological Interactions – Steve Murray, Rick Starr, Mary Yoklavich, and potentially Richard Parrish
    - Lead to be determined after the subgroup meets
    - This talk likely linked with Unit 4

Leads of presentation units will coordinate with Adina Abeles of COMPASS and Satie Airame of PISCO to refine presentations.

Units 1, 2 and 3 will be presented at the BRTF meeting on July 12, 2005.

Draft presentations of units 4, 5, 6 and 8 will be given at the next SAT meeting. Times and locations for the final presentations to either the BRTF or CCRSG will also be determined at that time.

Future Meetings

In the absence of volunteers for a permanent executive committee to assist SAT Chair Steve Barrager, John Ugoretz announced that he would consult with individuals on developing agendas for future SAT meetings as needed. In addition, it is recommended that a SAT

member other than the chair be present at all BRTF meetings to both represent and relay information back to the SAT.

The SAT decided meetings for the rest of 2005 would alternate between San Luis Obispo and Santa Cruz according to the following proposed schedule:

- Tuesday, August 2, 2005 – Santa Cruz
- Tuesday, August 30, 2005 – San Luis Obispo
- Monday, September 19, 2005 – Santa Cruz
- Tuesday, October 18, 2005 – San Luis Obispo
- Tuesday, November 15 – Santa Cruz

Exact locations of meetings to be determined.